



Nottinghamshire
Health Informatics Service
Transforming care through technology

ANNUAL REPORT

2017/18





MESSAGE FROM THE DIRECTOR

This financial year has been an exciting but challenging one for NHIS. It was also my first year as the NHIS director, of which I have thoroughly enjoyed.

The overarching theme for the year has been cyber security. We were called to action in the first quarter of the year with the arrival of the WannaCry Cyber-attack in May. This tested us to our limits, but I can only commend the way staff rose to the challenge this presented us with. The dedication and commitment from staff and partners to ensure there was minimal impact to patient care was fabulous. As the number and extent of cyber-attacks increase, the focus on security has become paramount, and although cyber security is everyone's responsibility, a new Cyber Security team has been set up within NHIS this year. The team have clearly defined roles and responsibilities to police and manage the cyber hygiene of the NHIS partner and customer estate. In addition to this a Cyber Security Strategy has been produced and signed off by all our partners, with the Cyber Security Assurance Board being set up to ensure the successful delivery of this strategy and to provide assurance to our partner and customer organisations.

As the NHS moves more into a digital world, and catches up with the rest of industry, we have started to lay down some solid foundations in relation to our infrastructure. Several projects have been deployed over the last year, to ensure we are prepared for future transformation programmes that will see patient care being fully supported through the use of technology. These infrastructure projects will continue into the next year with the deployment of the new datacentre providing additional offsite resilience in addition to dual

resiliency onsite being a key one.

Transformational projects have proved high on the agenda for us, with many different initiatives being delivered across the health community, providing benefits to our clinicians and patients. The work between Sherwood Forest Hospitals and Nottinghamshire County Council has taken a step further focusing on how electronic communications between the organisational boundaries can make a difference to the patient experience.

This year was the first year our organisation went through the ISO re-certification required after gaining ISO certification back in 2017. This was achieved with no major or minor non-conformances to the defined security standards, which we are certainly very proud of.

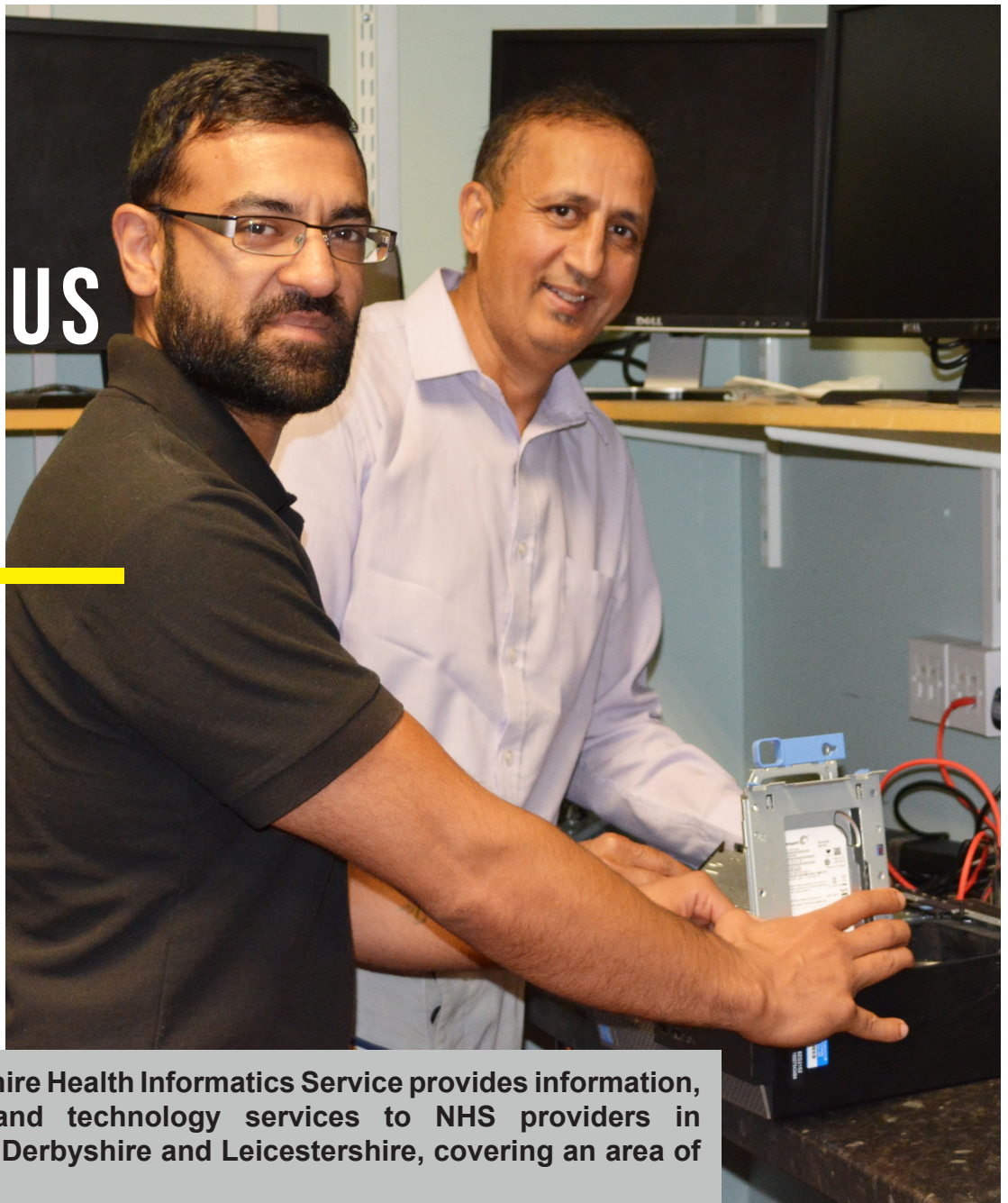
We have introduced Brilliant Basics which looks at how we can ensure our basic processes are effective and efficient, providing our end users with the experience they expect from an IT service provider. We also commenced the introduction of the NHIS Customer Forum which invites our partners to contribute to the way in which NHIS operates and hopefully enables further improvements to be made to the way in which we deliver our services.



Jaki Taylor, Director

Transforming care
through technology

ABOUT US

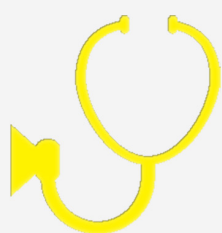


The Nottinghamshire Health Informatics Service provides information, communication and technology services to NHS providers in Nottinghamshire, Derbyshire and Leicestershire, covering an area of 834 square miles.

We are a not-for-profit organisation funded by eight partner organisations, Mansfield and Ashfield Clinical Commissioning Group, Newark and Sherwood Clinical Commissioning Group, Nottingham North and East Clinical Commissioning Group, Nottingham West Clinical Commissioning Group, Rushcliffe Clinical Commissioning Group, Nottingham City Clinical Commissioning Group, Nottingham CityCare Partnership and Sherwood Forest Hospitals NHS Foundation Trust. Our organisation is ISO 27001:2018 certified, holds the government-backed Cyber Essentials certification and our training services are one of the few training providers to have been awarded Silver accreditation by NHS Digital.

We work with a wide range of organisations to develop, implement, link and support systems across the local health community to support them to increase efficiency, value for money and provide high quality care in a supported approach around the needs of the patient.

OUR ORGANISATION IN NUMBERS



We support

15,000+

users across our
networks

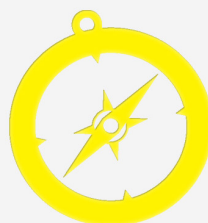


147

members of
staff.

8

partner organisations
fund NHIS.

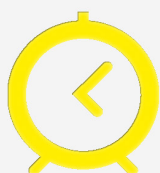
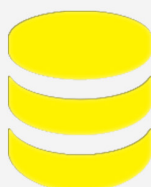


3

office locations
across
Nottinghamshire.

2.2 BILLION

records were processed
by our data warehouse
during the financial year.



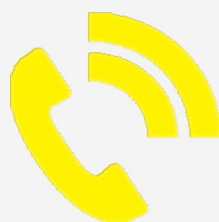
69

rows of data are
processed every
second.

This has increased

1800%

in the last 3 years.



110,236

support calls were
logged by our Service
Desk - increasing by
18% from 2016/17.



2,600+

people received
training from our silver
accredited Project
Implementation and
Training team.

In May 2017 our networks, like so many NHS networks, were impacted by the global WannaCry virus.

The cyber-attack, which was of an unprecedented scale and significantly impacted multiple countries, exploited a Microsoft Windows vulnerability to access a PC and then used a 'worm' to spread rapidly to other devices in the network.

Ransomware infections were noted initially in General Practice and as a result the network was taken down as a precautionary measure to contain and prevent the spread of the ransomware across the estate. This prevented Sherwood Forest Hospitals, the data centre and centralised servers becoming infected.

We worked closely with the clinical commissioning groups, our anti-virus software supplier and other security partners to develop the necessary remediation, reformat infected devices and restore the network.

Lessons were learnt from this cyber-attack, we introduced a dedicated cyber security team and, together with our partners, established a Cyber Security Assurance Programme. The focus of the programme is to further secure our networks, reducing the risk of cyber-attack.

Representatives for each

WORKING TOGETHER FOR A SECURE FUTURE



The Cyber Security Team L-R: Peter Fryer, James Kay and manager Paul Richards

partner organisation attend the programme board and working group to ensure decisions and actions are taken as one collaborative effort. We provide advice, support and recommendations to our partners on the board and evidence the existing security measures that are in place and their effectiveness.

The Cyber Security Assurance Programme is based upon UK Government recommendations – The 10 steps to Cyber Security, the Data Security Standards in the Caldicott Review and the Care Quality Commission Report – Safe Data, Safe Care and the lessons learnt locally and nationally from the



“As cyber security is only as strong as the weakest link, it is imperative that the whole health community works as one.”

WannaCry attack.

Working together the Cyber Security Assurance Programme is developing and adopting new joint policies and reviewing existing ‘settings’ to standardise across all organisations. Many actions have already been completed and work will continue throughout the next financial year and into the future as cyber threats continue to evolve.

As cyber security is only as strong as the weakest link, it is imperative that the whole health community works as one. The WannaCry attack has raised the importance of cyber security to everyone working in healthcare regardless of their role and now everyone has a better understanding of how their individual actions can impact the network.



PIONEERING INFORMATION SHARING PROJECT

Helping frail patients to return home quickly

We have worked with Nottinghamshire County Council on an innovative project to electronically transfer assessment notices from Sherwood Forest Hospitals directly into the council's social care system.

The assessment notices are generated by the hospital's Integrated Discharge Advisory Team and are required by social workers to start the social care discharge pathway. A total of 75 pieces of data make up the assessment notice and it previously took, on average, four and a half hours to share the information manually. This innovative project has enabled the data to be transferred system to system in seconds and administration staff no longer need to duplicate the information already typed in by the nursing staff, reducing the risk of human error when inputting the data.

The system to system transfer offers huge time saving benefits and allows access to referrals over the weekend when administrative staff are not available. Social workers will be able to access the automatically transferred referrals in their IT system and begin the social care assessment process in a timelier manner, thereby facilitating a quicker hospital discharge.

This work is the second phase of an ambitious project to share information between the two organisations. The first

phase commenced in 2016 to create a secure link between health and social care systems, something which has not been done before in the UK. This link has been used to great success by the Trust's Frailty Intervention Team since 2016 to access, with the patient's consent, social care information to establish if they are being provided with any care to support their safe discharge from hospital. The use is now well embedded into daily processes and prevents an average of 15 unnecessary admissions per week, it also benefits patients as it enables them to maintain their independence. One of the main benefits which was not identified during the project lifecycle, were the time savings made to the social worker based in the Medical Admissions Unit. This allowed them to focus on more complex cases, as clinicians can now answer straightforward queries via the link.

This trailblazing project has been shortlisted in the Local Government Chronical Awards and two Health Service Journal awards.

There are additional phases planned for the project, which will go live in the next financial year, these will include updating social care when there is a change in circumstances for patient, such as moving wards or a change in the estimated discharge date.





Sherwood Forest Hospitals' Emergency Care Department



Frail, elderly and vulnerable patients benefit from this project.

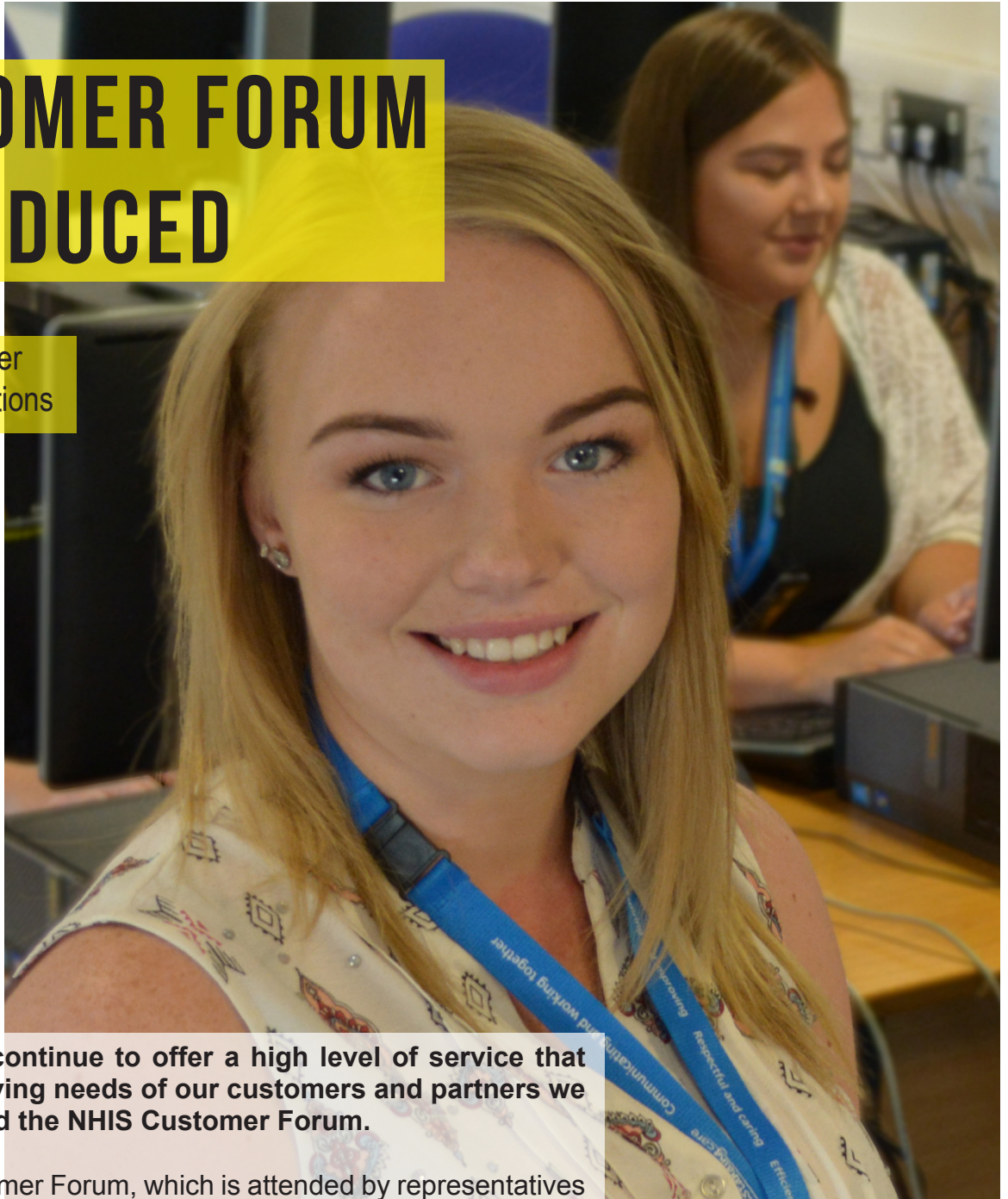
"This trailblazing project has been shortlisted in the Local Government Chronical Awards and two Health Service Journal awards."



Clinical staff from Sherwood Forest Hospitals with NHS Project Manager, Mary Whetstone.

CUSTOMER FORUM INTRODUCED

Meeting customer
service expectations



To ensure we continue to offer a high level of service that meets the evolving needs of our customers and partners we have introduced the NHIS Customer Forum.

The NHIS Customer Forum, which is attended by representatives from each of our partner organisations, meets quarterly with the inaugural meeting being held in March 2018.

The forum focuses on the commonalities between the partner organisations and allows members to discuss the tactical, operational and detailed technical elements of our service provision as well as reviewing propositions for current or new services. It supports operational decision making in relation to IT and is closely linked to the Partnership Board's strategic view for ICT services and provision.

The forum will not only benefit our services but will also enhance the working relationship between all the represented organisations as it will ensure that ICT decisions are cascaded through the respective partner organisations as well as identifying opportunities for collaborative working and the sharing of best practice.

TEAM SELECTED FOR CASE STUDY



Our Project Implementation and Training team has been selected by NHS Digital to feature in their latest case study, showcasing their approach to gaining the Silver Training accreditation.

The team undertook NHS Digital's Training Service Accreditation scheme for the second time in March 2017, achieving the silver level and becoming one of the few NHS training providers nationally to attain the silver.

NHS Digital were so impressed by the way in which the team worked together to prepare for the assessment they selected the team for their latest promotional case study highlighting the internal and external benefits of the accreditation scheme.

The case study describes how the whole team was involved, gathering evidence and preparing for the assessment. Members of the team were asked to lead in different standards so that

the trainers could focus on gathering evidence for their own standard and they took on the responsibility for ensuring the requirements were met. It also highlights how the team and their learner feel they have benefitted from the accreditation programme.

The case study is being used on NHS Digital's and NHS Network's websites as well as being shared widely with their NHS training contacts.

"NHS Digital were so impressed, they selected the team for their latest promotional case study."



MAKING A DIFFERENCE TO GP PRACTICES

Throughout 2017/18 we have improved the IT infrastructure and equipment at GP surgeries across Nottinghamshire benefitting both staff and patients.



No need to back up servers

Centralising data in our datacentre has removed the daily need for practices to back up their own data.



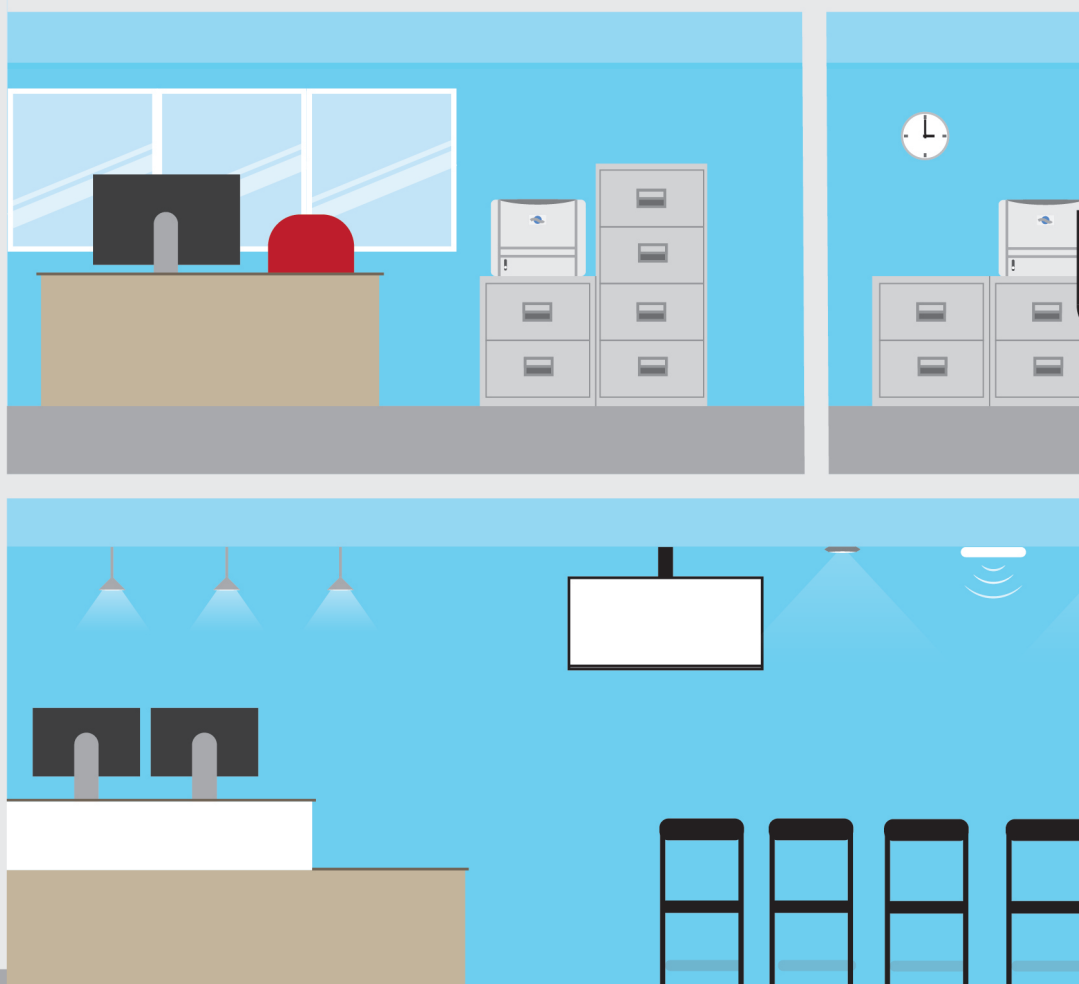
Print service

New standardised printers have been installed which order consumables as necessary, reducing administration and saving money.



Larger monitors

Where there isn't enough room to accommodate two monitors we have provided a larger monitor allowing users to split the screen to use it like two monitors.



CoIN upgrade

The Community of Interest Network (CoIN) has been upgraded across all GP practices and is compliant with the new Health and Social Care Network.



Free patient Wi-Fi

GP practices across Nottinghamshire were amongst the first nationally to offer free NHS Wi-Fi for all their patients



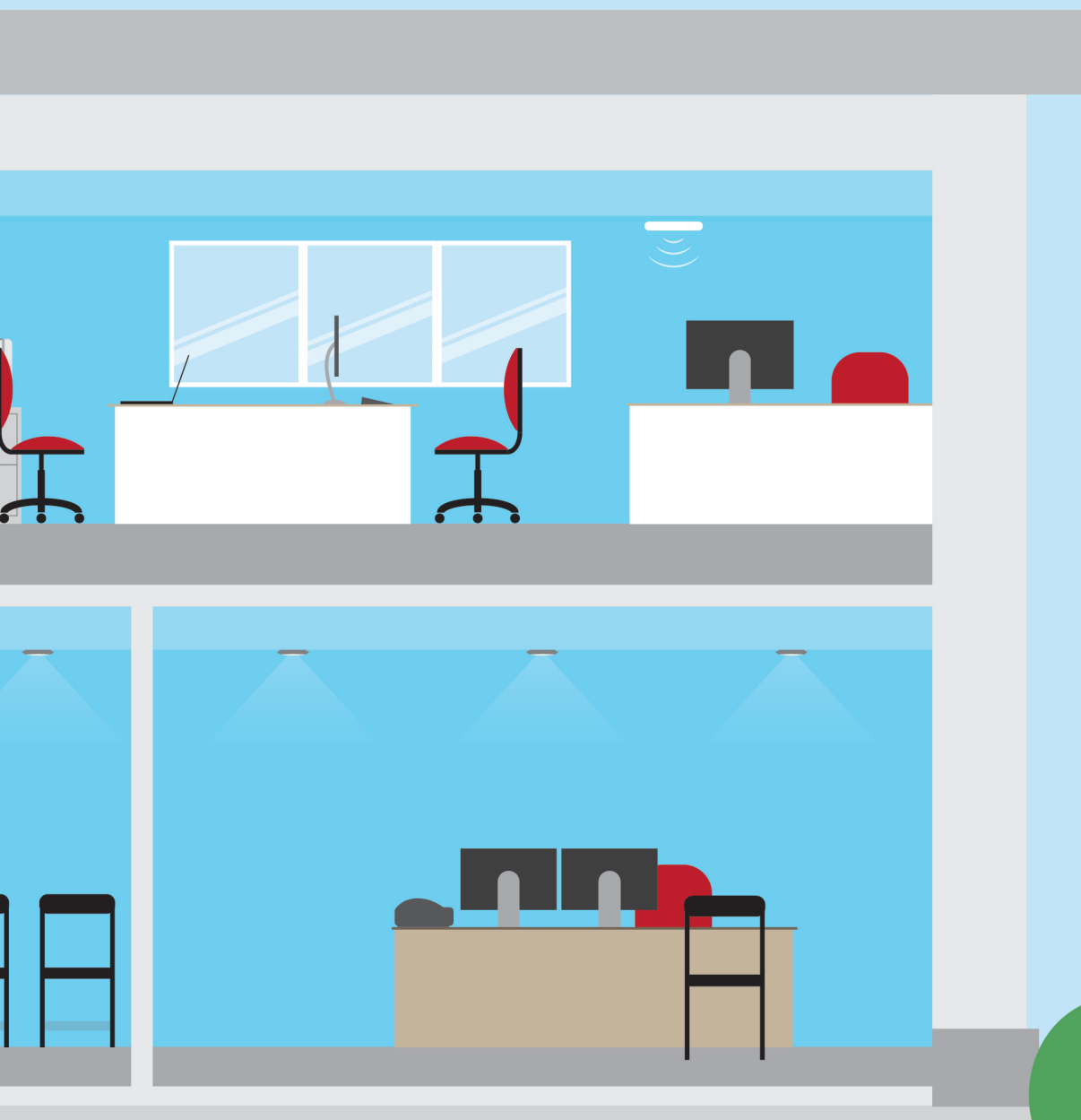
Mobile working

We have provided laptops and clinical Wi-Fi providing clinicians access to services irrespective of their location.



Improved Wi-Fi

New cabling and wireless access points provide strong Wi-Fi coverage across the entire site which can cope with additional demand that may be needed in the future.



Centralised servers

Centralising data in our datacentre has freed up valuable space for additional storage or desk space.



Prescription printers

New prescription printers have lockable drawers in line with CQC requirements



Dual Monitors

These enable prescriptions, medications, patient recalls, tasks and correspondence to be efficiently processed whilst enhancing patient safety.

MIGRATING EMAILS

2017 saw the introduction of a new Information Standards Board standard for NHS secure email (Standard ISB1596). In order to comply with this mandatory standard, all NHS partners and customers email accounts needed to be moved from the local Microsoft Exchange 2003 email service to a secure email platform. NHSmail was chosen as the preferred solution.

The project involved approximately 11,000 email accounts across 150 organisations, including Sherwood Forest Hospitals Trust, Nottingham CityCare Partnership, Greater Nottingham CCGs and Mid Nottinghamshire CCGs and all GP practices.

The account migrations were carried out in organisational order, at a rate of approximately 250 accounts per night.

The migration process involved making a copy of all email mailbox data and adding this to the NHSmail account. When the data transfer was complete the accounts were

switched and the NHSmail account became the primary email account. Any emails sent to the old email account were automatically forwarded to the NHSmail account for a period of three months.

Around 2,000 mobile devices needed to be updated to receive NHSmail email. This had to be carefully planned as the update needed to be sent to the device on the same day as the email accounts were switched in order to ensure email access was uninterrupted for the end user.

The migration process involved no email downtime for the email users, and to keep support call waiting times to a minimum a dedicated NHSmail support line was provided for the entire duration of the project, with extra phone support provided by the project team during the busiest times.

11,000

email accounts
migrated

2,000

mobile devices
updated

250

accounts
migrated per night

TELEPHONY GROWTH

For a number of years we have managed and supported a large telephony infrastructure and service for several partners and customers. Previously infrastructure for this telephony service was based upon enterprise grade, Voice over IP (VOIP) technologies on physical controllers. Although this technology was provided from one of the leading telephony, unified communications and contact manufacturers, Mitel, it was aging and presented NHIS and the users of this service with a few challenges.

A large project commenced back in 2016 to migrate the overall infrastructure onto a more resilient, fully redundant, centrally hosted virtualised environment to ensure the service was more efficient and effective.

The experience after the move onto this platform was a very positive one with



numerous reports being received back about the flexibility and experience it created. Word soon spread about the service being delivered through this new infrastructure – so much so that the service has now taken on several additional new customers over this past year, who are all now experiencing this positive service.

NEW DATACENTRE

A business case and funding has been approved for a new datacentre that will replace our existing hardware and offer additional resiliency.

The datacentre hardware design leverages all the new advancements in recent years. We are opting for a Hyper Converged 'modular' design which will allow us to grow

the compute (memory and processor) and storage in logical 'chunks' and incrementally.

The new design will allow the datacentre to switch to another datacentre location on site instantly should the main location fail for any reason and we have now been able to build in additional offsite resiliency which will be provided by Nottinghamshire Healthcare.

INTRODUCING NERVECENTRE

New electronic system
supporting clinical care and
enhancing patient safety.

During the financial year we have worked closely with Sherwood Forest Hospitals to introduce Nervecentre which is a new clinical digital platform and maximise the benefits that it offers.

Following staff feedback the Trust opted to replace their existing e-observation system with Nervecentre as the system offered the additional functionality which had been requested by staff to support clinical care and further improve patient safety.

The new functionality has included automatic escalations, e-handovers and task management. The automatic escalation function automatically flags deteriorating patients to the appropriate clinician, leading to patients being assessed and commencing treatment more quickly. The e-handover provides many benefits including improved adherence



A healthcare assistant with a Nervecentre device

to information governance policy, better auditing of the information and enhanced information sharing across the multidisciplinary teams. To support effective e-handovers occupational therapists and physiotherapists were also given a Nervecentre device and have their own specific handover fields to complete.

Throughout the second half of the financial year we worked to introduce task management for ward based

staff and Hospital Out of Hours (HOOH) which has improved the way patient tasks are processed out of hours and at the weekend. This electronic system helps night team leaders allocate task to the most appropriate clinician based on skill set, availability, relationship to the patient and current work load amongst others. This leads to patients receiving prompt and best quality care whilst also preventing any delays to treatment or discharge.

The extensive project started in 2014 and in the summer of 2018 the roll out of Nervecentre and the clinical digital platform devices commenced. All permanent ward-based staff were issued with their own personal device, and a number of 'baton' devices were deployed on the wards for bank staff to use. The devices also provide other key applications such as the British National Formulary (BNF), Employee Online, Trust guidelines and NHSmail.

The implementation period was carefully planned to ensure the hospital switched to Nervecentre as quickly as possible whilst ensuring staff were well supported and patient safety was adhered to at all times. The 28 adult inpatient wards across the three hospital sites switched to Nervecentre over a period of 10 weeks, allowing clinical staff time to receive all the necessary training and go-live support.

Since the initial launch we have worked closely with the Trust to continue to expand the system into the paediatric ward, who have completely embraced moving from paper charts to the electronic system and introduce additional functionality to increase efficiency and further improve patient safety.

The success and positive perception of Nervecentre across the trust has led to departments coming forwards and asking to utilise its functionality, for example the Pharmacy department requested the ability to use Nervecentre handover. The creation of a pharmacy handover profile has provided better visibility of workload and helped with staff distribution.

Over the next financial year, we will continue to support the Trust to introduce new functions such as a standardised board round, bed management, assessments and NEWS2 as well as introducing the system into the Emergency Department and Urgent Care Centre ensuring the Trust maximises the patient safety benefits and value for money.



A Nervecentre device displaying test patient data.

Sharing ideas with other IT organisations

WORKING TOGETHER TO BENEFIT ALL

Working together, sharing ideas and experiences provides great opportunities to look at doing things differently and gaining greater benefits from collaborating. This has been a common theme this year which we intend to extend into the future.

There is much to be gained from this collaborative approach as we have already seen this year by developing closer links with several organisations.

Over the course of the financial year we have started to work more closely with our host organisation, Sherwood Forest Hospitals NHS Foundation Trust, and we are now seen as an integral part of their Strategic Planning and Commercial Development directorate. This has brought benefits for both ourselves and the Trust

as it has provided us with strong support and a greater understanding of how the Trust operates and how we can support them, enabling us to operate more efficiently and effectively.

This year we've engaged with Staffordshire and Shropshire Health Informatics Service (SSHIS) who have a similar footprint to ourselves, supporting primary care, clinical commissioning groups, community services and an acute hospital trust. This has provided a great opportunity to discuss challenges and solutions together. To understand more about each other and what we can learn, our managers have visited SSHIS sites to look at their business practices and processes and welcomed their staff to our sites on a number of occasions, including individual teams meeting to

compare approaches. Both ourselves and SSHIS have made a number of changes as a result of the visits, including the introduction of the Customer Forum at NHIS. We are hoping this relationship and valued learning with SSHIS will continue into the future.

Likewise, stronger relationships have been formed with other health and social care organisations in the Nottinghamshire health community to focus on what we can all do better by





Leaders from Nottinghamshire Health Informatics Service and Staffordshire and Shropshire Health Informatics Service.

Working together has provided a great opportunity to discuss challenges and solutions together.

working collaboratively. Together with Nottingham University Hospitals and Nottinghamshire Health Care, who are the other main providers of ICT to healthcare within Nottinghamshire, we have agreed to work collectively to support the delivery of the Accountable Care System across Nottinghamshire. At times healthcare staff are required to work from another organisations site, for instance a clinician from Nottinghamshire Healthcare may be required to work

from one of Sherwood Forest Hospitals sites. It is important that the clinician experience is not hampered by the fact there are different providers of ICT and this can only be achieved by working collaboratively and this will continue to develop into the future. This year, because of this collective working approach, we have already seen plans approved for offsite NHIS data centre resiliency being provided by Nottinghamshire Healthcare, with further collaboration being considered.

GROWING OUR WORKFORCE

Benefits of apprenticeships

In recent years we have developed our apprenticeship programme and this financial year saw the largest intake of apprentices yet, with nine apprentices joining our organisation, accounting for 6% of our workforce.

Having apprentices in our organisation has allowed us to rethink our department structures and introduce junior roles across the organisation to enable the apprentices to apply and transition from an apprentice role into a role where they can develop further and progress their careers. This allows us to grow our staff which is especially beneficial for the more specialist roles which can be hard to recruit to.

An example of this is Tom Sefton who gained an apprentice role with our Solutions Development team where he studied a level 3 NVQ in IT Web and Telecoms. During his apprenticeship Tom also undertook additional study which enabled him to learn programming languages including Rhapsody which is a major integration tool. Previously the Solutions Development team comprised of solely of developers



L-R: Elysia Hawkins, Tom Sefton, Shannon Wheat, James Price and Ellie Walsham

which are high-level roles requiring years of experience. Having an apprentice working in the team prompted us to review the team's structure, we have now created two junior developer roles which enabled Tom to apply and he was successful in gaining one of the positions.

Of the nine apprentices, six have now taken up full time roles with our organisation, one has gained full time employment with a local NHS provider and two decided to further their studies, gaining further education places.

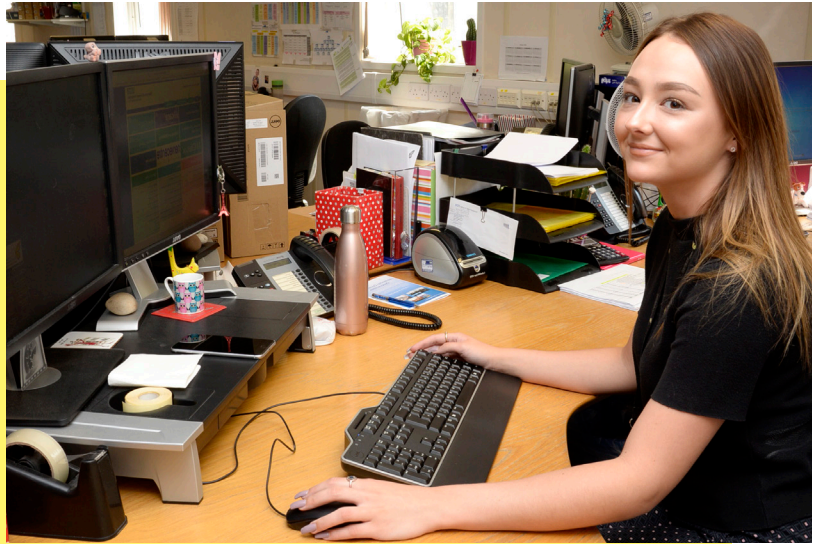
We actively encourage all apprentices that are successful in gaining job roles within our teams to continue with their learning with many opting to study a higher level NVQ and one has successfully gained a place on a degree programme.

Name: Ellie Walsham

**NVQ: Business Administration
(level 2)**

Ellie Walsham worked as an apprentice within our Finance team and studied towards a NVQ Level 2 in Business Administration. The course allows learners to develop the skills required to provide administrative service in any size or type of organisation.

As her apprenticeship was nearing completion Ellie was successful in gaining a permanent role within the



Finance team providing administration support to the team.

Ellie is continuing to develop in her role and is now working towards a Level 3 in Business Administration.



Name: James Price

**NVQ: IT Web and Telecoms
(level 4)**

James Price joined our Service Engineer team whilst he undertook a Level 4 NVQ in IT Web and Telecoms higher apprenticeship which lasted 18 months. Higher apprenticeships offer industry-relevant qualification

at a level equivalent to undergraduate study therefore James was required to complete a significant amount of academic writing to fulfil the requirements of the course.

Whilst completing his apprenticeship, James also undertook the ITIL (Information Technology Infrastructure Library) certified qualification, which is aimed at IT professionals, and successfully passed it.

We have now employed James as an ICT Technical Support Assistant.

OUR FINANCIAL POSITION

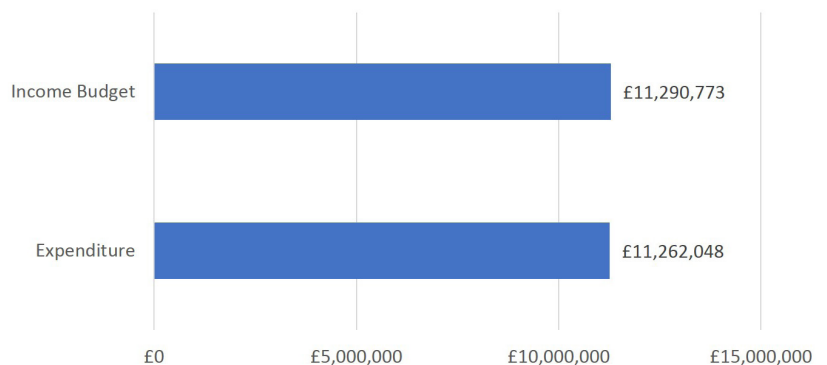
Pressures on the NHS are greater than they have ever been before; the population is getting healthier but are using the NHS more, and although staff numbers have increased across the NHS nationally these staff are under greater pressure.

The NHS Five Year Forward View described three improvement opportunities: a health gap, a quality gap and a financial sustainability gap. To respond to these challenges, our partners and customers need to work differently, exploiting the efficiencies that technology can offer.

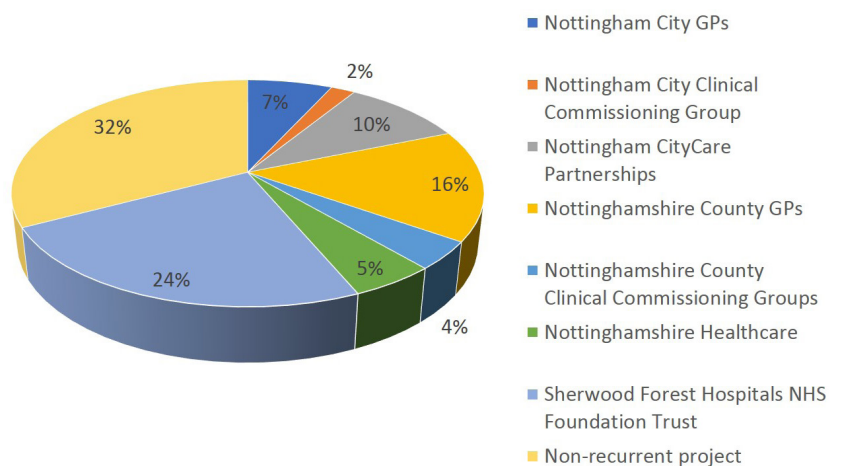
It is against the context of these considerable challenges and opportunities that we are pleased to report a breakeven position for the eighth consecutive year.

A breakdown of our income and expenditure for 2017/18 is provided to the right.

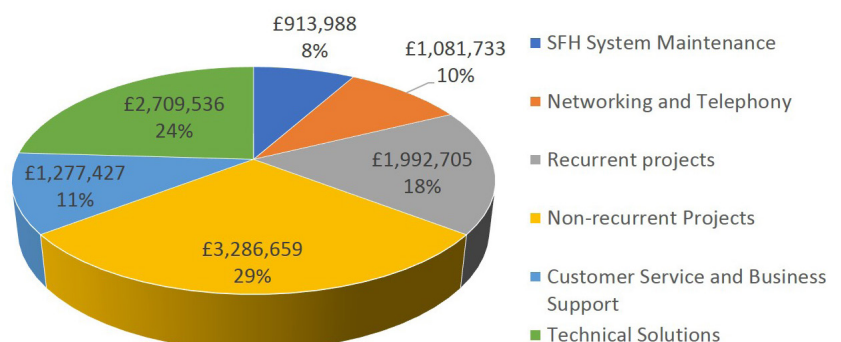
NHIS Income Budget and Expenditure 2017/18



NHIS Income 2017/18



NHIS Expenditure 2017/18



CHARITABLE DEEDS

Over the years our kind-hearted staff have raised money for a range of good causes and this year we have decided to dedicate our fundraising activities towards one specific cause that will benefit members of our local community.

After discussing our ideas with the Paediatric department at Sherwood Forest Hospitals we

are raising money to purchase iPads to entertain children when they are admitted to ward 25 at King's Mill Hospital.

Over the next financial year we are planning on holding dress-down days, sporting events and donating the profits from our tuck shop to fundraise for this cause.

FORWARD VIEW

The next year presents us with some exciting challenges as we see the formation of new health and social care structures across the local community.

To ensure NHIS are able to continue to support the changing needs of our different partner and customer organisations, the collaborative work with Nottinghamshire Healthcare and Nottingham University Hospitals will continue. This collaborative approach ensures we, and our counterparts, can deliver a better patient and clinician experience, particularly across the organisational boundaries.

It is important that digital technology supports

the formation of new approaches to health and care delivery. There will need to be a clear focus on aligning our deliverables to the strategy of the Integrated Care System across Nottinghamshire, in addition to the local requirements of our partners and customers.

There is positive enthusiasm about what digital transformation can achieve for both patients and the services that support patient care.

The next financial year will be about balancing and prioritising the demand with the capacity to ensure we focus on the key priorities and make a real difference in the local community.

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